9. *A Text-book of Elementary Chemistry, Theoretical and Inorganic;* by GEO. F. BARKER, M.D. — Prof. Barker's excellent treatise has already been briefly noticed in this Journal, and we propose now to call attention somewhat more in detail to its advantages and merits as an elementary work. The first 86 pages are devoted to Theoretical Chemistry, which is here made to include stœchiometry, nomenclature and the general theory of combination. The remainder of the work is occupied with descriptive inorganic chemistry. Each chapter terminates with a series of questions always valuable but particularly useful in making the student thoroughly acquainted with the introductory or theoretical portion of the work, which is wholly in the spirit of the most advanced thought in the science. To the author's nomenclature we take some exceptions. Such terms as *potassium chlorate, calcium phosphate*, &c., though employed by many English chemists at the present day, are, to say the least, of doubtful etymological propriety, and we greatly prefer the corresponding adjective forms, *potassic chlorate, calcic phosphate*, &c., while admitting that these are not always of easy application. Dr. Barker himself occasionally employs the adjective forms, and will, we hope, carry them out systematically in future editions. On the other hand, however, we heartily agree with him in rejecting the absurd term "anhydride," which denotes, not what a substance does but what it does not, contain, and in employing such names as sulphurous and sulphuric oxide for $S\Theta_2$ and $S\Theta_3$, nitrous and nitric oxide for $N_2\Theta_3$ and $N_2\Theta_5$, &c., adopting the form *carbonic dioxide* for $C\Theta_2$ to avoid confusion. With the author's original views as to the constitution and nomenclature of the ortho-acids and bases and their derivatives, we also entirely agree. The descriptive part of the work is carefully and judiciously compiled, omitting unnecessary and burdensome detail. Upon the whole we find in Dr. Barker's work a concise, logical and clear treatise, well adapted as a first book, and we sincerely hope that it may be followed by a similar work on Organic Chemistry. W. G.

II. GEOLOGY AND NATURAL HISTORY.

1. *A Reply to Mr. Dall's criticism on the Brachiopods as a division of the Annelids;* by EDWARD S. MORSE. — The July number of this Journal contained a brief abstract of a verbal communication made by me before the Boston Society of Natural History, on the "Brachiopoda as a division of the Annelida."* I did not expect the concurrence of conchologists to the view there advanced, for I recalled the manner in which an eminent conchologist of England, Mr. Sowerby, received the announcement by Thomson that the Cirripeds were Crustaceans. So in this question, the Conchologists, so far as I am aware, oppose it. While any impartial review would have been answered in my

* Since republished from this Journal in the Annals and Mag. Nat. History, London.

memoir now in preparation, it seems proper that a reply should be made to a criticism contained in "a Revision of the Terebratulidæ and Lingulidæ, etc.," by Wm. H. Dall, and published in the American Journal of Conchology, vol. vi, part 2. While thanking Mr. Dall for his kindly notice of my labors, and appreciating fully the value of the work he is engaged in, as comprised in his communications to the above named Journal, I am yet compelled to plainly criticize the manner in which he has presented the question in his review.

Mr. Dall says that the "utmost impartiality" should be used in the discussion and "due consideration should be given to the facts," etc. This "utmost impartiality" is illustrated, by passing over in absolute silence, not only all my references to the limited knowledge we possess of the embryology of the Brachiopods as shown by Lacaze Duthiers, but the dorsal and ventral plates—the serial arrangement above and below of setæ, and even the gill laminæ in *Lingula*, as first recognized by Savigny in the annelids—the bi-lobed lophophore—the cephalic collar—the thin and muscular visceral walls—the singular results obtained by Gratiolet in the chemical analysis of the shell of *Lingula anatina*—the presence of the cæcal prolongations of the mantle, and their relations to the *porenkunale* in the annelids—and, above all, the remarkable existence of one or more pairs of *segmental organs*, in form, character and functions like the segmental organs of the annelids, the first feature that led me to regard the Brachiopods as annelids six months before I ever saw living *Lingulæ*. All these points are passed over in the "utmost impartiality" of silence. Overlooking with the same impartiality my statement that the Brachiopods presented a *comprehensive type*, and comprised certain crustacean characters, he neglects to mention the winter egg of the Polyzoa and similar features in the lower Crustacea, and we might add similar features in certain rotifers now admitted to be worms. So also the presence of striated muscular fiber in certain muscles of the Brachiopoda, their absence in the Mollusca, and their presence as one of the prominent characters in Crustacea. He gives us, however, Clark's definition of the Mollusca which comprise the characters of the branch as then understood, which includes of course the Tunicata, Polyzoa and Brachiopoda. In defining the Vermes, with the same impartiality, reference is made only to those Vermes in which the body is made up of a repetition of similar parts, overlooking entirely the unisegmental Vermes which comprise a large proportion of the class; nor is reference made to the remarkable cephalization of many Annelids, where the posterior portion of the body has been called a caudal appendage, being without bristles. In some, the thoracic rings, few in number, have a wide flaring membrane running continuously along each side (*Protula.*)

We leave others to judge of his conclusions respecting the character of the setæ, as also his startling homology of the peduncle of *Lingula*, and the syphonal tubes of a clam (!) and call attention to his statement, that because the setæ are not found the

entire length of the peduncle, therefore they are by no means "identical" with those of the worms. This will be a new idea to naturalists, that the confinement of appendages to limited portions of the body, forbids all homology with those in which the appendages run the entire length. It indicates also that Mr. Dall believes that all Chætopods have setæ from head to tail.

He states as a grave objection that the Brachiopods are invariably attached by muscles to a bivalve shell. In the same breath he should have added that worms are also invariably attached to a *bivalve* or multivalve shell, whether it be the scuta of *Sternaspis*, the oval plates of *Lepidonotus*, or the hardened integuments of others.

He lays great stress on the presence of bristles in Chiton, as if that group were the very embodiment of the Molluscan type, but with the same impartiality he neglects to mention its embryology, so remarkably articulate as shown by Lovén, its dorsal vessel, the double and forward opening of the oviducts, the anus terminal, and other features so remarkably articulate, as to induce De Blainville to recognize their affinities with the annelids, to prompt Milne-Edwards to call them a Satellite group, and to cause Jeffries to liken them, in their different stages, to "Isopods, tiny trilobites, Onisci and Aphrodita."

In mentioning my anatomical drawing of various Brachiopods, he says, "some of them taken from life," he should have said, "most of them taken from life."

In concluding his paper he refers to drawings in my collection of a "singular sipunculoid worm," "and appears from them, to have an anterior termination to the intestine, thus forming a notable exception to the general rule among worms." The drawing to which he refers is the common sipunculoid worm of the coast. *Phascolosoma*, *Sipunculus* and its allies claim it as a right to have an anterior termination to the intestine, a fact known to every one who ever made them a study. Finally, in his comparisons, with the exception of Chiton, he confines himself to, and only points out a few of the many relationships between the Brachiopods and Polyzoa and Tunicates, admitted by all. Now since Leuckart, Gegenbaur, Haeckel, and other eminent naturalists of Europe, have seen conclusive reasons to remove the Polyzoa and Tunicates entirely from the Mollusca, and place them among the Vermes, it seems that Mr. Dall's first task should be to whip these back to the Mollusca, before commencing with the Brachiopods.

2. *On Eozoon Canadense;* by Prof. Wm. King, S.C.D., and Thos. H. Rowney, Ph.D., of the Queen's Univ. in Ireland, and the Queen's College, Galway. 42 pp. 8vo, with three colored plates, (Proc. Roy. Irish Acad., July, 12, 1869).—The following Supplementary note to the paper noticed on page 68, was read Feb., 1870.

Within the last fortnight we have been successful in finding "eozoonal" structures under conditions which unmistakably establish their origin.